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AUTHOR Glines, Don
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ABSTRACT

The emerging global and societal conditions demand more than the rhetoric of restructuring, reform, change, and innovation. Educators must adopt the spirit of astronauts to confront the issues directly, create a desirable future for learning, and overcome the inertia of the existing school system. The proposal for the Minnesota Experimental City (MXC) is an exciting educational alternative. Planned for a community of 250,000 people, the MXC features waterless toilets, a geodesic dome, centralized/decentralized living, electronic technology, people movers, and no cars. Most importantly, it was designed with no schools; the city itself will be a lifelong learning laboratory. Although the city has not yet been constructed, creative educational architects can adapt the concepts and weave them into the local district transitions needed to move into the 21st century. School leaders can begin by designating one existing facility as a districtwide MXC space center for education or by creating school-within-a-school experiments throughout the district. The idea of research and development in education must be restored. Year-round schooling offers creative possibilities, but the Coalition for Essential Schools is focused on improving what already exists, promoting 20th century notions such as school-based management, teacher development, and interventions for disadvantaged students. A list of 25 steps is presented for administrator/astronauts seeking community-based learning models. (MLH)

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IMAGINEERING: KEY TO EDUCATIONAL FUTURES

Don Glines

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IMAGINEERING: KEY TO EDUCATIONAL FUTURES

by
Don Glines

The emerging global and societal conditions demand more than the rhetoric of restructuring, reform, change, and innovation clarioned by politicians, education political leaders, and conventional educators. The state of the universe clearly signals the need to imagineer totally new learning systems more appropriate for 2015.

Exploring scientists and astronauts believe that they could be on Mars within this timeframe, should Congress return to a moon landing commitment in funding space exploration. If technologists can conceive a two-year trip to Mars, then educators can certainly imagine, invent, develop, and implement a replacement for the 19th Century concept of schooling. Imagineering is a key to preferable educational futures.

The existing sixty-four global dilemmas--in reality only one macroproblem, not multiple miniproblems--make obsolete the heralded Carnegie, Holmes, National Governors Association, and similar reports; the headline education codes passed by the North Carolina, Washington, California, Arkansas, Minnesota, Maine, Massachusetts, and other legislatures; and the decentralization reforms in such large city districts as Chicago and New York. Unfortunately, these well-intentioned efforts are primarily rearrangements of what has been, with mixed success, in place for decades.

The current restructuring proposals have varied the vocabulary; twisted slightly the requirements for promotion, graduation, and certification; and ignored the research and experimentation from the decades of 1900-1910, 1928-1938, and 1965-1975. Better implementation of existing program improvement practices--rigorous core curriculum, larger enrollments in "academic" classes, higher test scores, the new curriculum agenda (fresh visions of literacy in the various subjects), cooperative learning, school-based management, and more Chapter 1 money--is not a viable solution for a society in transition toward a transformation in the early decades of the next century.

The realities of macroproblem conditions, and their impacts on schooling, have been well documented in an overwhelming bibliography, including: State of the World (Brown); Ariadne's Thread (Clark); Rapids of Change (Theobald); An Incomplete Guide to the Future (Harman); the over 100 topical Worldwatch publications (Worldwatch Institute); No Limits to Learning (Botkin); Educating for a New Millennium (Shane); Tomorrow's Educator (Barnes); and Educational Futures (Glines).

Society is at a crossroads. The potential is there, as Buckminster Fuller wrote, for the dawning of a golden age--not a perfect utopia, but a far superior life for most all--an Opportunity Society, as coined by Yoneji Masuda--a time for life worth living. But the golden age is asterisked with a maybe*, for instead there could easily be a tumultuous period of ferment, regression, and gloom--not to mention catastrophic recession and/or inflation periods. The dawning will only occur if citizens as individuals, and as leaders of institutions--schools, corporations, governments--change their values, lifestyles, and priorities. Unsafe cars, environmental pollution, trillion dollar debts,

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spiraling superstar salaries, and proliferating arms are no longer excusable. It is clearly the affective domain, not the cognitive, that will make the difference for humankind.

Educators, as persons and as communities, must adopt the spirit of astronauts, if they are to confront the issues directly, create a preferable future for learning, and overcome the inertia of the existing schooling system. Needed are a series of space centers--some Cape Canaveral launching sites to send forth the education versions of the Discovery and the Columbia--and yes, potentially the Challenger. The latter was unfortunate, but not a failure; from it came important improvements for the space industry. Future learning history must be explored; for those opting to reduce the risks, the pioneering attitudes of the settlers who embarked on the covered wagon treks would be welcomed.

Ironically, though, the model of NASA, which was so effective for a moon landing, and potentially for new directions for schools, may only prove to be of value in retrospect. The United States, on paper, has had a wonderful space policy; early accomplishments have been amazing. But support has diminished in Congress and the White House, to the extent that, if present levels continue, within twenty years the U.S. is projected to rank fifth in space behind a combined Europe, Russia, Japan, and China. Soon Cape York in Australia, and Kourou, French Guiana, may replace Canaveral as the primary sites for launching commercial satellites.

After a dynamic start--even with the loss of Apollo 1--lethargy has consumed much of the support for space exploration. Since the Challenger, indications are that NASA has become egocentric and turf-protecting, the Pentagon has created its own space agenda, and significant issues related to the future of space have been ignored; many astronauts returning to civilian life have become increasingly disenchanted. Though the Discovery, and the excitement of a trip to Mars, have managed to keep alive the early aspirations of NASA, a major lesson has evolved for educators.

A return to the golden dreams for space, society, and humankind requires the rekindling of a spirit in education that goes beyond restructuring. However, not all families need to be astronauts; those school communities content to fly longer in 747s should have the best--they should restructure and reform. Conversely, those administrators, teachers, parents, and students who are willing to fly in the Discovery and Columbia--who are willing to volunteer to lead space exploration concepts for education--should be supported and given that opportunity. Whenever experimenting with the elimination of schooling seems near impossible, to strengthen the resolve, remember the Wright brothers--two bicycle shop proprietors, who without a high school diploma, and with an original biplane that flew only 3-1/2 seconds, revolutionized transportation; they changed the world.

School administrator pioneers, supported by professional organizations, legislatures, and private industry, must become the new Wright brothers/sisters--the inventors in education. They must confront the impossible, for the possible is no longer working. Timidity is not acceptable--nor are excuses of money, state laws, and "the community." Planning for the trip to Mars has begun; arrival on the surface can occur tomorrow.

The proposal for the Minnesota Experimental City (MXC) yields one satellite for educational astronauts to deposit while orbiting the future. The MXC was planned for a community of 250,000 people, with waterless toilets, centralized/decentralized living, geodesic dome, electronic

technology, people movers, and no cars. But most important, it was designed with no schools; schooling and education were replaced by learning--by new systems. Everyone was a teacher; everyone was a student. The city was to be the living learning laboratory. Learning was finally to become a life-long process.

Though the MXC has not yet been constructed, creative educational architects can adapt the concepts and weave them into the local district transitions needed to move into the 21st Century. A beginning can easily become reality by designating one existing facility as the districtwide MXC space center for education. It can also be accomplished by creating MXC school-within-a-school experiments throughout the district--or county in less populated environments. There are at least ten other practical, now, methods for establishing local, regional, state, national experimental launching sites--the new thirteen colonies, striving to break away from the suffocating control of the traditions of England and France.

The idea of research and development (R&D) is not new in education; it has only been lost for too many years. The three great laboratory schools in this century--University of Chicago (Dewey) 1900-1910; Ohio State University (Lindquist) 1930-1940; and Mankato State University (Glines) 1968-1978--proved that experimental programs work, are essential, and could, if widely studied, set the stage for massive rethinking of what is now termed the "school system." Major corporations spend five to ten percent on R&D; smaller ones commit one to five percent. Education assigns less than one-fourth of one percent. It is no wonder new designs are not produced; even most of the known research is ignored. When searching the startling, disturbing, delightful studies that are available, it is soon discovered that there is more evaluation to support massive change in schooling, than there is to promote all the traditional curriculum, teaching, scheduling, calendar, and organization patterns existing in conventional wisdom.

The current reform efforts continue to beg the question. Economics is not the reason for education. Schools were not created to beat the Japanese (and that society is in trouble with large numbers of employees traveling two hours one way each day), nor were they philosophically perpetuated to prepare workers for major corporations (most Japanese labor more than eight hours a day). They were designed, ideally, to provide continuous lifelong learning for the mind, spirit, and body of the individual, and as a group, enhance preferable present and future conditions for society.

Schools were not to ignore the affective and psychomotor domains, and focus only on the cognitive. Unfortunately the end result proved otherwise. The automobile companies, with all their college graduate engineers and directors, continued to build many unsafe cars. Improvement began only after prodding by new government laws and consumer backlash--economics. A case in point is the mini-van. It has been the last to gain the front, rear, and side impact protection; rear shoulder straps and head supports; anti-lock brakes; air bags on both sides; rollover supports; and maximum torque with high gas mileage. Yet these were vehicles sold to young families and, therefore, should have been the first to--or at least in tandem with--receive maximum protection--not the luxury and sport cars. Most of the manufacturers making such decisions had done well in high school and college; they knew the cognitive domain--profit, economics. They failed the affective--caring, sociology--and the psychomotor--injuries, health.

With the global crises of the nineties, schools and legislatures can no longer battle over money; massive funding of all the societal priorities has become impossible. The infrastructure repairs, medical and health care, forms of social security and pensions, recession cycles, arms for defense, under and unemployment, immigration, crime, drugs, natural disasters, international events, and inflation limit the amount of money education can expect. The constant pleas for dollars must be tempered by the other realities. Cash is desperately needed, but most of the early shifts from schooling to learning can occur without huge financial infusions. Where additional funding is requested, it should be for research and development and to support the evidence--not just tradition. Research is clear the money for physical education should go first to the kindergarten, then the primary grades; hopefully there will be enough for high schools and athletics. But educators continue to do it backwards--athletics first, then high school gyms, the middle school, last little folks. Why?

The same tradition prevents creative rethinking of the school calendar. There is no research, child growth and development evaluation, or curriculum scope and sequence proof to support a nine-month September to June calendar. There is no research to support 180 days; students in the 163-day programs are doing well. Some advocates want to increase the year to 200 days, though educators have not maximized the time now available. The same group wants to reduce class size, raise teacher salaries, and build new schools. With the existing financial structures, and educational assessment test scores, few of these proposals can be supported. Nationally, after the past ten years of reform efforts, SAT verbal scores are down, and math results are stable. Clearly the present is not the answer for the future of learning.

There are already partial solutions for the school year and improvement concerns. Most sites could adopt a year-round calendar, providing for more continuous learning, and for those overcrowded, up to 50 percent increased space. Associate teachers (A.A. degrees) could be placed as teacher assistants in the classroom to alleviate size problems, beginning with the K-4 grade levels and English in the secondary. Reducing class size otherwise creates enormous obstacles. It requires additional classrooms and demands more new schools, all in the face of financial limitations for construction, coming teacher shortages, bilingual confrontations, and exploding limited-English-proficient-populations in many regions.

Embracing year-round would reduce the amount needed for construction. The difference could be directed to helping teachers and the recruitment of replacements; for teacher assistants--many of whom could be bilingual; for providing continuous learning patterns and twelve-month support for students in poverty; and for creating a window to construct new but fewer facilities. Educators, parents, and legislatures should look more carefully at creative proposals. Whatever is adopted, in terms of comparative research, there is absolutely no evidence to defend the practice of one teacher in a room with 35 students for nine months, as if all youth within a twelve-month age span were equal in learning interests and development.

Significant efforts to restyle schools for the nineties era programs are already in progress. Dr. Ted Sizer at Brown University has assembled "The Coalition for Essential Schools," an excellent start at improving what exists. The teaching methods and general philosophy are geared for conventional innovation, but two factors related to futures are questionable in the Coalition plan. First,by reducing the curriculum opportunities rather than expanding them--to focus on the "essentials"--the project may not sufficiently reach the needs of many of the volunteered youth.

Second, the Coalition is not a design for the next century; it is an attempt to improve/restructure current schooling. There is still a need for astronaut educators willing to establish educational space colonies now on earth.

The support is available for explorers. The RJR Nabisco Foundation established the Next Century Schools Program, with grants to put "bold, risk-taking ideas into action...for we hope to stimulate visionary thinking and are prepared to give...education venture capital." Unfortunately, most of the early submitted proposals focused on 20th, not 21st Century notions: school-based management, interventions for disadvantaged students, community and parent involvement, teacher development, technological literacy, and curriculum improvement. To date more hope has come from the Virginia Commission On the 21st Century, by calling for universities to end the "tyranny of the disciplines" and to "develop a vision of how higher education can confront the rapidly changing world social and economic systems." Nabisco funded projects need to truly become dreamers of the dreams--the Willie Wonka prototypes for learning.

The 2.3 million dollar grant given by the Blandin Foundation to establish the "Center for School Reform" at the University of Minnesota Humphrey Institute, and fund restructuring projects in Minnesota schools, is further validity that private support is available to promote a look at the future. The State of Washington "Schools for the 21st Century" project confirms public, legislative support for testing new ideas, if only school people will move beyond tradition. The opportunities are there for true pioneers.

Any district can envision and implement future alternatives by breaking the existing lockstep and creating a "transition stage"--a step between the conventional school, and the anticipated systems which are seen as arriving early in the next decades. The proposals outlined for "educational space centers" can be applied, with modifications, at the elementary, middle, high school, or college levels. The descriptions following of thirty-two examples of what can be achieved now are suggested for a K-12 program--with preschool, adult, and university years interwoven--as a choice for all in the community to participate as volunteers.

In the future there will be more technology, more home learning, more use of computers and satellites, and additional new forms of electronics; that is understood. There will be less need for the school building. It is time, with what is on hand, for some communities to implement not "futures as the future," but future realities as are possible today. Tomorrow is a new story. The ideas cited for the present are not new; they are starting points, for they have not been implemented on a widescale in districts and states.

Parallel to the MXC model, units of critical mass size can begin their 21st Century educational space center mission by eliminating the following 20th Century impediments to envisioning new learning systems. If a district took one school, and turned it into a transitional "Center for the Future," the characteristics could reflect the following immediate differences, in contrast with the generally practiced traditions:

1. There would be no required 9-3 school hours on campus; instead, the learning system would be community based, with the facility serving as a headquarters. Students, including the young, would often spend the majority of their time outside the Center facility walls, thus improving their learning opportunities.

2. There would be no elementary and secondary school separations; youth from the conventional K-12 levels would be mixed together with preschool and prebirth youngsters and their parents, college students, family members, and senior citizens.

3. There would be no grade 1, grade 7, or sophomore distinctions; the school would be nongraded. Everyone would share the same teachers, facilities, programs, equipment, and philosophies. Age is not the major factor in learning.

4. There would be no labeling of students--no special education, gifted, at-risk, bilingual, compensatory, minority, or other such monikers; there would be individuals, sometimes working alone, sometimes in ad hoc or planned groups, sometimes in communities.

5. There would be no report cards--no A, B, C letter grades, or needs improvement, satisfactory, outstanding marks; evaluation would be tailored for the individual and for his or her family.

6. There would be no group assessment, standardized, or traditional classroom tests. Students, parents, and staff would meet to determine aspirations, goals, interests, and needs on a personalized basis. Individual progress would be determined by what the student learned--not by what was unknown; students would receive "3 right," not "7 wrong," reinforcement.

7. There would be no class ranks, Carnegie or other such units, grade-point averages, or traditional transcripts to send to transfer schools; cooperation with universities would establish at least five different approaches upon which the university, space center, student, and family could agree related to admission.

8. There would be no class facility for 30. The space would be changed to open areas; small sizes to fit no more than 10; larger gathering arenas; and multiple varieties of individual and independent learning places. Some walls would go up, others would be torn down, while many would receive an arch--assuming remodeling of an existing building.

9. There would be no core curriculum, no required subjects, classes, or courses. Students of all ages, working with their advisors, parents, and teachers would determine the learning curriculum appropriate at that moment. One student might be concentrating on a single focus; another could be experiencing 15 different activities; a third might select four or five interrelated components. There would be no "academics" and "non-academics"; all learning would be equal (except safety and health priorities) and important at the time of engagement.

10. There would be no teachers, as commonly described, with their own classrooms teaching separate subject classes or units. Adults would not work in isolation, but rather in teams together assisting learners with learning. Students would select

all their person relationships; no student would be "assigned." Teacher assistants (two years preparation) would be widely used as team members, as would many volunteer parent and community persons.

11. There would be no separate subject courses; knowledge is not segmented; it is interrelated. Therefore, all curriculum efforts would work toward true interdependent learning. High school departmentalization concepts, or compartmentalized elementary school "basics," would be nonexistent. Tutoring, student teaching, volunteering, experiencing other cultures, and personal enrichment would be strongly suggested.

12. There would be no effort to re-live the past and present, other than as a basis for understanding the process of perceiving and becoming. "History" would be very important, but the activities of the space center would focus on creating a preferable future history for all individuals and society; the past would be used to help create the years ahead. Science fiction would imagine reality.

13. There would be no counselors and assistant principals. Instead, each adult would be an advisor--a friend, confident, listener, advocate, defender, scolder--a human being. Students would select their own advisors, and advisors would select their own youth; no one would be "assigned." The six "match" factors would dominate: age, sex, interests, perception, skills, personality.

14. There would be no mandated schedules such as period 1-2-3 in the current secondary, or elementary reading at 9:00 a.m., potty time at 10:30, math at 10:45, and lunch at 11:30. There would be a nonscheduled environment where students and staff developed on a daily basis their own schedules. There would be no lunch period; food would be available throughout the day as needed.

15. There would be no textbooks, homework, or semester assignments. There would be reams and volumes of resource materials, electronic learning aids, home learning with computers and satellite connections. The more students would be away from the site facility, the more successful the learning program. Technology is in its infancy, but the "Space Center" would have all available equipment. Present machines are not well utilized in the curriculum.

16. There would be no assigned daily attendance; participation would be voluntary. The world would be the classroom. Students would determine each day, week, month, year where and when to study, whether to come to the "school," stay home, or venture to a community or special focus learning or involvement center. The same would be true for five- and six-year-olds, as well as those seventeen. The younger would have more help/direction/supervision from parents, staff and older students.

17. There would be no isolated learning except by choice. Independent study would be desired, but so would peer and cross-age tutoring, cooperative and collaborative learning, small and large group instruction, and team projects. Students would not

be competing to receive an A or an F on their own. The daily individual/group "schedule" would be determined by the learning plan and social preference.

18. There would be no separation of school and community. Adults would be in the "school;" youth would be in the "community." There would be no adult education. The mix would provide for health care services, welfare assistance, child care, recreation programs, and family counseling. It would be a miniature city.

19. There would be no nine-month school calendar. Instead there would be continuous, year-round, twelve-month learning opportunities available to all participating in this lighted school version of an education space flight. The offerings would be available theoretically 365 days a year, minus the realities of the decade of the 90s. The facilities would hold double or triple the original design, for so much of the time large numbers of youth would be learning in the community.

20. There would be no discipline problems, for students, parents, and teachers would volunteer for this mission. Students would select their own learning activities, attendance patterns, learning partners, and instructors. Where personal and social problems arose, a "Person Center" would be established to assist individuals and groups in need of special counseling, control, advice, or rehabilitation.

21. There would be no lack of traditional community involvement, as the special program needs of the youth would be interwoven with those of the community at large. The police, health, drug, social workers would join with university professors, scholars, recreation leaders, and governing officials to ensure the success of this space flight.

22. There would be no mandated traditional hour-by-hour, day-by-day, group-paced classes, but instead instruction and learning would be individualized and personalized for each involved person. Groups would function as desired, not by artificial arrangements for scheduling, snacks, and teacher convenience. All subjects need not be studied each day for the same amount of time, as there is no validity to the traditional concept of scope and sequence.

23. There would be no desks in five rows of seven facing a chalkboard; instead the facilities would resemble a home, a working laboratory, a service center, a resource house, and a human environment complex. Traditional classroom desks and textbook sets for every student would be seen as hindrances to learning.

24. There would be no additional costs, other than requested start-up assistance for redesigning learning. The funding would be the same as available to each school for the support of students, faculty, and learning. All traditional ability levels ethnic groups, socio-economic conditions, and special health factors would be served. It would be a "space center for everyone."

25. There would be no need for new laws. There are already ample education code provisions and waivers to create transition programs. Additional supportive legislation, if needed, could be passed when identified.

These ideas are not new. They have been successfully documented by the three great laboratory schools of the past--Chicago, Ohio State, and Mankato State--and the many publications of the 30s, 60s, and 70s--including the 1976 National School Boards Association research report, Alternative Schools, and the National Secondary School Principal publication, A School for Everyone, (Trump). But the "Center for the Future" would not rest with sampling the past. Interwoven with the elimination of the twenty-five learning impediments from the 19th and 20th Centuries would be the adoption of the 21st Century opportunities proposed by the Minnesota Experimental City, and the lessons of the real astronauts as they planned for the moon and now plan for Mars. Eliminating the old provides opportunities for the new. The past barriers would be gone. In change, it is necessary to unlearn before learning--to be disoriented before being oriented--and thus a DOR: disorientation, orientation, re-orientation program would be established.

The proposed NASA Space Center for Education would not only change twenty-five traditions, it would add seven improvements to the list: (26) much more extensive use of Existing Community Facilities (parks, businesses, government offices); (27) creation of visionary Beginning Life and Early Life Studios (creative parent, young children, staff interaction); (28) development of Stimulus Studios (constantly changing array of stimuli to extend learning); (29) more reliance on Gaming Studios (learning through simulated design and games); (30) planned use of Project Studios (creation of reality activities and inventions); (31) identification of Learner Banks (housing for special equipment needed by the learner); (32) expanded use of Family Life Studios (families learning together).

The form of these concepts would remain experimental, fluid, and changing. Failure within the system would not be allowed to continue. Learners would not be excluded; instead, the system would adapt to their needs. The Space Center would become one prototype for a life-long learning system--for dreamers to imagine and invent. The Epcot mascot, Figment, would become a member of the space center crew.

The need for such developments at all levels of what now passes for schooling and education has been well documented by the global and societal crises, and by the one hundred books and articles published every month the past eight years, as reported by Michael Marien in Future Survey--the most important and mandatory reading assignment for future leaders--published by the World Future Society. Marien has annotated over 10,000 books (both "liberal" and "conservative") which address the requirement for new directions. There is no longer any doubt; schooling cannot survive very far into the 21st Century.

Educators must respond to this challenge by creating a series of experimental research and development centers--their versions of learning vehicles designed to carry students, teachers, parents, and community members, as volunteering astronauts, on that mission beyond the moon to a colony on Mars. The goal is not restructuring the old model, with more math, science, and cognitive standards; the dream is for affective caring, impossible realities, and entirely new learning systems for the future of education and society.

Don Glines is Director, Educational Futures Projects, and Consultant, California Department of Education, Sacramento, CA